WHAT IS CLAIMED IS:

1. A safety valve, comprising:

a piston which displaces in response to a differential between pressure in a hydraulic line connected to the safety valve, and pressure in an annulus surrounding the safety valve;

an operating member which displaces to open and close the safety valve; and

a magnetic coupling between the piston and the operating member, the magnetic coupling translating piston displacement into operating member displacement to thereby actuate the safety valve.

2. The safety valve according to Claim 1, wherein the operating member is pressure isolated from the piston.

3. The safety valve according to Claim 1, wherein there are no dynamic seals between pressure acting on the piston and pressure acting on the operating member.

4. The safety valve according to Claim 1, wherein a rigid barrier separates pressure acting on the piston from pressure acting on the operating

member, and wherein the magnetic coupling translates displacement from the piston to the operating member across the barrier.

5. The safety valve according to Claim 1, wherein the magnetic coupling includes at least one first magnetic device attached to the piston, and at least one second magnetic device attached to the operating member.

6. The safety valve according to Claim 1, wherein the operating member is an opening prong of the safety valve which opens and closes a flapper.

7. The safety valve according to Claim 1, wherein the operating member is pressure-balanced.

8. The safety valve according to Claim 1, further comprising a flow passage extending axially through the safety valve, the flow passage being pressure isolated from the hydraulic line, without the use of a dynamic seal.

9. The safety valve according to Claim 1, further comprising a flow passage extending axially through the safety valve, the flow passage being pressure isolated from the annulus, without the use of a dynamic seal.

10. The safety valve according to Claim 1, further comprising a flow passage extending axially through the safety valve, without any dynamic seal being exposed to pressure in the flow passage.

11. A method of actuating a safety valve, the method comprising the steps of:

displacing a piston of the safety valve in response to a differential between pressure in a hydraulic line connected to the safety valve and pressure in an annulus surrounding the safety valve;

translating displacement of the piston to displacement of an operating member, the translation being performed across a rigid pressure isolation barrier without the use of any dynamic seal; and

actuating the safety valve between open and closed positions in response to displacement of the operating member.

12. The method according to Claim 11, wherein in the translating step, a magnetic coupling is used to fix displacement of the operating member to displacement of the piston.

13. The method according to Claim 11, wherein in the translating step, at least one first magnet is attached to the piston and at least one second magnet is attached to the operating member, magnetic attraction between the first and second magnets causing the operating member to displace with the piston.

14. The method according to Claim 13, wherein in the translating step, a differential exists between pressure surrounding the first magnet and pressure surrounding the second magnet.

15. The method according to Claim 14, wherein in the translating step, the barrier isolates the pressure surrounding the first magnet from the pressure surrounding the second magnet, without the use of any dynamic seal.

16. The method according to Claim 13, wherein both the first and second magnets are permanent magnets.

17. The method according to Claim 11, wherein the safety valve has a flow passage extending axially therethrough, and wherein in the translating step the operating member is displaced without exposing any dynamic seal to pressure in the flow passage.

18. The method according to Claim 11, wherein the safety valve has a flow passage extending axially therethrough, and wherein in the actuating step no dynamic seal is exposed to pressure in the flow passage.

19. The method according to Claim 11, wherein the safety valve has a flow passage extending axially therethrough, and wherein in the displacing step

the piston is isolated from pressure in the flow passage without the use of any dynamic seal.

20. The method according to Claim 11, wherein in the actuating step, the operating member is pressure-balanced.

21. A well tool, comprising:

an actuator including a piston which displaces in response to a first pressure applied to the piston;

an operating member which displaces to operate the well tool, the operating member having a second pressure applied thereto; and

displacement of the piston being translated into displacement of the operating member while the first and second pressures are isolated from each other, without the use of any dynamic seal between the piston and the operating member.

22. The well tool according to Claim 21, wherein the well tool is a safety valve, and wherein displacement of the operating member actuates the safety valve between its open and closed positions.

23. The well tool according to Claim 22, wherein the operating member is an opening prong of the safety valve.

24. The well tool according to Claim 21, wherein the well tool is a packer, and wherein displacement of the operating member sets the packer.

25. The well tool according to Claim 24, wherein the operating member is a setting mandrel of the packer.

26. The well tool according to Claim 21, wherein the well tool is a valve with openings for flow laterally therethrough, and wherein displacement of the operating member actuates the valve between open and closed positions.

27. The well tool according to Claim 26, wherein the operating member is a sliding sleeve of the valve.

28. The well tool according to Claim 21, wherein the well tool is a choke, and wherein displacement of the operating member regulates a rate of flow through the choke.

29. The well tool according to Claim 28, wherein the operating member is a flow regulating member of the choke.

30. The well tool according to Claim 21, further comprising a magnetic coupling including at least one first magnet attached to the piston and at least one second magnet attached to the operating member.

31. The well tool according to Claim 21, wherein each of the first and second magnets is a permanent magnet.

32. The well tool according to Claim 21, wherein the first pressure is hydraulic pressure in a first hydraulic line connected to the actuator.

33. The well tool according to Claim 32, wherein a third pressure is applied to the piston, and wherein the piston displaces in response to a differential between the first and third pressures.

34. The well tool according to Claim 33, wherein the third pressure is hydraulic pressure in a second hydraulic line connected to the actuator.

35. The well tool according to Claim 33, wherein the third pressure is pressure in an annulus surrounding the well tool.

36. The well tool according to Claim 33, wherein the operating member is pressure isolated from the third pressure, without the use of any dynamic seal.

37. A method of actuating a well tool in a well, the method comprising the steps of:

displacing an actuator member of the well tool;

translating displacement of the actuator member to displacement of an operating member by use of a magnetic coupling therebetween; and

actuating the well tool in response to displacement of the operating member.

38. The method according to Claim 37, wherein in the displacing step the actuator member is exposed to a first pressure, and wherein in the translating step the operating member is exposed to a second pressure, the first and second pressures being isolated from each other.

39. The method according to Claim 38, wherein in the translating step the magnetic coupling translates displacement from the actuator member to the operating member across a rigid pressure isolation barrier between the first and second pressures.

40. The method according to Claim 38, wherein in the translating step the first and second pressures are isolated from each other without the use of any dynamic seal therebetween.

41. The method according to Claim 38, wherein in the displacing step the actuator member is exposed to a third pressure, the actuator member displacing in response to a differential between the first and third pressures.

42. The method according to Claim 41, wherein in the displacing step the first and third pressures are each isolated from the second pressure, without the use of any dynamic seal.

43. The method according to Claim 41, wherein in the displacing step the first pressure is pressure in a first hydraulic line connected to the actuator, and the third pressure is pressure in a second hydraulic line connected to the actuator.

44. The method according to Claim 41, wherein in the displacing step the first pressure is pressure in a first hydraulic line connected to the actuator, and the third pressure is pressure in an annulus surrounding the well tool.

45. The method according to Claim 41, wherein in the displacing step the first pressure is pressure in a first hydraulic line connected to the actuator, and the third pressure is pressure in a chamber of compressed gas.

46. The method according to Claim 37, wherein in the actuating step the operating member is an opening prong of a safety valve.

47. The method according to Claim 37, wherein in the actuating step the operating member is a sliding sleeve of a sliding sleeve valve.

48. The method according to Claim 37, wherein in the actuating step the operating member is a setting mandrel of a packer.

49. The method according to Claim 37, wherein in the actuating step the operating member is a flow regulating member of a choke.

50. The method according to Claim 37, wherein in the actuating step the operating member is used to rotate an assembly within the well.

51. The method according to Claim 50, wherein in the actuating step, the assembly is a perforating gun assembly rotationally oriented within the well.

52. A well tool, comprising:

an actuator;

at least one first magnetic device attached to the actuator, the first magnetic device being positioned in a first portion of the well tool at a first pressure, and the actuator displacing the first magnetic device;

at least one second magnetic device attached to an operating member, the second magnetic device being positioned in a second portion of the well tool at a second pressure, and the well tool being operated in response to displacement of the operating member; and

a pressure barrier isolating the first and second pressures, and displacement of the first magnetic device on a first side of the barrier causing displacement of the second magnetic device on a second side of the barrier.

53. The well tool according to Claim 52, wherein the first pressure is pressure in a hydraulic line connected to the actuator.

54. The well tool according to Claim 52, wherein the second pressure is pressure in an internal flow passage formed axially through the well tool.

55. The well tool according to Claim 52, wherein the first pressure is pressure in an annulus surrounding the well tool.

56. The well tool according to Claim 52, wherein the first pressure is pressure in a chamber containing compressed gas.

57. The well tool according to Claim 52, wherein the well tool is a safety valve, and the operating member is an opening prong of the safety valve.

58. The well tool according to Claim 52, wherein the well tool is a sliding sleeve valve, and the operating member is a sliding sleeve of the valve.

59. The well tool according to Claim 52, wherein the well tool is a packer, and the operating member is a setting mandrel of the packer.

60. The well tool according to Claim 52, wherein the actuator is a rotational actuator, and wherein rotation of the first magnetic device by the actuator causes corresponding rotation of the second magnetic device and operating member.

61. The well tool according to Claim 52, wherein the operating member is pressure-balanced.

62. The well tool according to Claim 52, wherein the first pressure is isolated from the second pressure without use of any dynamic seal.

63. The well tool according to Claim 52, wherein the actuator displaces the first magnetic device in response to a pressure differential in the actuator.

64. The well tool according to Claim 52, wherein the actuator displaces the first magnetic device in response to operation of a motor in the actuator.

65. The well tool according to Claim 52, wherein the actuator displaces the first magnetic device in response to a differential between the first pressure and a third pressure applied to the actuator.

66. The well tool according to Claim 65, wherein the third pressure is pressure in a hydraulic line connected to the actuator.

67. The well tool according to Claim 66, wherein the first pressure is pressure in an annulus surrounding the well tool.

68. The well tool according to Claim 67, wherein the second pressure is pressure in a tubular string in which the well tool is interconnected.

69. The well tool according to Claim 68, wherein the tubular string pressure is isolated from the hydraulic line pressure and from the annulus pressure, without use of any dynamic seal.

70. The well tool according to Claim 52, wherein the actuator displaces the first magnetic device in response to pressure in a hydraulic line connected to the actuator, the hydraulic line pressure being isolated from the second pressure.

71. The well tool according to Claim 70, wherein the hydraulic line pressure is isolated from the second pressure without use of any dynamic seal.

72. The well tool according to Claim 52, wherein the actuator displaces the first magnetic device in response to a differential between pressure in an annulus surrounding the well tool and pressure in a hydraulic line connected to the actuator.

73. The well tool according to Claim 72, wherein the hydraulic line pressure and the annulus pressure are isolated from the second pressure without use of any dynamic seal.

74. The well tool according to Claim 73, wherein the second pressure is pressure in a tubing string in which the well tool is interconnected.

75. The well tool according to Claim 73, wherein the first pressure is the annulus pressure.

76. A safety valve, comprising:

a piston which displaces in response to a differential between pressure in at least one hydraulic line connected to the safety valve, and pressure in another hydraulic line connected to the safety valve;

an operating member which displaces to open and close the safety valve; and

a magnetic coupling between the piston and the operating member, the magnetic coupling translating piston displacement into operating member displacement to thereby actuate the safety valve.

77. The safety valve according to Claim 76, wherein the operating member is pressure isolated from the piston.

78. The safety valve according to Claim 76, wherein there are no dynamic seals between pressure acting on the piston and pressure acting on the operating member.

79. The safety valve according to Claim 76, wherein a rigid barrier separates pressure acting on the piston from pressure acting on the operating member, and wherein the magnetic coupling translates displacement from the piston to the operating member across the barrier.

80. The safety valve according to Claim 76, wherein the magnetic coupling includes at least one first magnetic device attached to the piston, and at least one second magnetic device attached to the operating member.

81. The safety valve according to Claim 76, wherein the operating member is an opening prong of the safety valve which opens and closes a flapper.

82. The safety valve according to Claim 76, wherein the operating member is pressure-balanced.

83. The safety valve according to Claim 76, further comprising a flow passage extending axially through the safety valve, the flow passage being pressure isolated from the hydraulic lines, without the use of a dynamic seal.

84. The safety valve according to Claim 76, further comprising a flow passage extending axially through the safety valve, the flow passage being pressure isolated from the annulus, without the use of a dynamic seal.

85. The safety valve according to Claim 76, further comprising a flow passage extending axially through the safety valve, without any dynamic seal being exposed to pressure in the flow passage.

86. A safety valve, comprising:

a motor which displaces an actuator member of the safety valve;

an operating member which displaces to open and close the safety valve; and

a magnetic coupling between the actuator member and the operating member, the magnetic coupling translating actuator member displacement into operating member displacement to thereby operate the safety valve.

87. The safety valve according to Claim 86, wherein the operating member is pressure isolated from the actuator member.

88. The safety valve according to Claim 86, wherein there are no dynamic seals between pressure acting on the actuator member and pressure acting on the operating member.

89. The safety valve according to Claim 86, wherein a rigid barrier separates pressure acting on the actuator member from pressure acting on the operating member, and wherein the magnetic coupling translates displacement from the actuator member to the operating member across the barrier.

90. The safety valve according to Claim 86, wherein the magnetic coupling includes at least one first magnetic device attached to the actuator

member, and at least one second magnetic device attached to the operating member.

91. The safety valve according to Claim 86, wherein the operating member is an opening prong of the safety valve which opens and closes a flapper.

92. The safety valve according to Claim 86, wherein the operating member is pressure-balanced.

93. The safety valve according to Claim 86, further comprising a flow passage extending axially through the safety valve, the flow passage being pressure isolated from the actuator member, without the use of a dynamic seal.

94. The safety valve according to Claim 86, further comprising a flow passage extending axially through the safety valve, the flow passage being pressure isolated from the annulus, without the use of a dynamic seal.

95. The safety valve according to Claim 86, further comprising a flow passage extending axially through the safety valve, without any dynamic seal being exposed to pressure in the flow passage.

96. A method of actuating a safety valve, the method comprising the steps of:

displacing an actuator member of the safety valve;

translating displacement of the actuator member to displacement of an operating member, the translation being performed across a rigid pressure isolation barrier without the use of any dynamic seal; and

actuating the safety valve between open and closed positions in response to displacement of the operating member.

97. The method according to Claim 96, wherein in the translating step, a magnetic coupling is used to fix displacement of the operating member relative to displacement of the actuator member.

98. The method according to Claim 96, wherein in the translating step, at least one first magnetic device is attached to the actuator member and at least one second magnetic device is attached to the operating member, magnetic attraction between the first and second magnetic devices causing the operating member to displace with the actuator member.

99. The method according to Claim 98, wherein in the translating step, a differential exists between pressure surrounding the first magnetic device and pressure surrounding the second magnetic device.

100. The method according to Claim 99, wherein in the translating step, the barrier isolates the pressure surrounding the first magnetic device from the pressure surrounding the second magnetic device, without the use of any dynamic seal.

101. The method according to Claim 98, wherein both the first and second magnetic devices include permanent magnets.

102. The method according to Claim 96, wherein the safety valve has a flow passage extending axially therethrough, and wherein in the translating step the operating member is displaced without exposing any dynamic seal to pressure in the flow passage.

103. The method according to Claim 96, wherein the safety valve has a flow passage extending axially therethrough, and wherein in the actuating step no dynamic seal is exposed to pressure in the flow passage.

104. The method according to Claim 96, wherein the safety valve has a flow passage extending axially therethrough, and wherein in the displacing step the actuator member is isolated from pressure in the flow passage without the use of any dynamic seal.

105. The method according to Claim 96, wherein in the actuating step, the operating member is pressure-balanced.

106. A well tool, comprising:

an actuator for displacing an actuator member of the well tool;

an operating member which is displaced to operate the well tool; and

a magnetic coupling between the actuator member and the operating member.

107. The well tool according to Claim 106, wherein the magnetic coupling includes first and second magnetic devices, the first magnetic device being connected to the actuator member, and the second magnetic device being connected to the operating member.

108. The well tool according to Claim 107, wherein the first and second magnetic devices are on opposite sides of a pressure barrier.

109. The well tool according to Claim 107, wherein the first and second magnetic devices are pressure isolated from each other without the use of a dynamic seal.

110. The well tool according to Claim 107, wherein the first magnetic device includes a first series of magnets having polarities opposite to a second series of magnets in the second magnetic device.

111. The well tool according to Claim 107, wherein each of the first and second magnetic devices includes magnets having axially aligned polarities.

112. The well tool according to Claim 107, wherein each of the first and second magnetic devices includes magnets having radially aligned polarities.

113. The well tool according to Claim 107, wherein each of the first and second magnetic devices includes magnets having opposing polarity directions, so that the magnets in each of the first and second magnetic devices are attracted to oppositely directed polarity magnets in the other of the first and second magnetic devices.

114. The well tool according to Claim 107, wherein each of the first and second magnetic devices includes magnets having opposing polarity directions, so that the magnets in each of the first and second magnetic devices are repelled by similarly directed polarity magnets in the other of the first and second magnetic devices.

115. The well tool according to Claim 107, wherein each of the first and second magnetic devices has a magnetic pattern, the magnetic patterns preventing relative displacement between the first and second magnetic devices.

116. The well tool according to Claim 115, wherein the magnetic patterns are produced by varied spacings between magnets in the first and second magnetic devices.

117. The well tool according to Claim 115, wherein the magnetic patterns are produced by varied polarity sequences between magnets in the first and second magnetic devices.

118. The well tool according to Claim 117, wherein the varied polarity sequences include alternating magnet polarities in the first and second magnetic devices.